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Plasmonic Coupling of a Gold Colloid and a Gold Film ALBERT CHANG, FEI LE, FELICIA TAM, NAOMI HALAS, PETER NORDLANDER, KEVIN KELLY, Rice University — Engineering of plasmon resonances is important for a variety of applications, including but not limited to surface enhanced Raman spectroscopy (SERS) and near field scanning optical microscopy (NSOM). Of special interest are systems where the plasmons of a nanoparticle and a thin gold film are coupled. This coupling allows for a greater degree of control of the plasmon resonance of the system, as well as a strong, localized, enhancement of the incident electric field. We demonstrate that this coupling, and the resulting enhancement, can be used for SERS applications, and explore its impact on potential NSOM applications.

Albert Chang
Rice University

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